ON FIBROUS STRICTURE OF THE ŒSOPHAGUS.[1]

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IN 1882, I had the honor of laying before the Surgical Society of Ireland, the details of a case of cicatricial stricture of the œsophagus, which I treated by rupture, followed for some time by the passage of bougies. I then entered at some length into the whole subject of fibrous stricture of the œsophagus, its causes, usual situations, symptoms, pathology and treatment. I do not therefore propose on the present occasion to cover the same ground, or to weary you with "reiterated logic," but rather to give the details of some cases which have been, from time to time, under my care, and shortly to discuss the different methods of treatment adopted.

The first case to which I shall refer, is the one to which I have already alluded, and to which I should now like to call attention as I have had during the past year an opportunity of seeing the patient, and of estimating the value of treatment after the expiration of more than eight years.

The patient was a girl, æt. 20 years, who came under my care, in the Throat Hospital, on October 17, 1881, suffering from a stricture in the œsophagus, situated about three quarters of an inch below the cricoid cartilage. The cause assigned was the impaction of a hard bread crust in the œsophagus four and a half years previously. Dysphagia had come on very gradually and, when I first saw her, even fluids were swallowed with considerable difficulty. She had lost very considerably in weight, and was anæmic and emaciated. The day after her admission I tried to get in a No. 8 catheter (English gauge). Great difficulty was experienced, as the œsophagus was much dilated above the stricture and I had to probe about against the floor of this

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dilatation with the olivary point of the catheter before I could find the opening. At last, and after many attempts, I succeeded in worming the catheter through, and I then left it *in situ*. It was retained for an hour, during which period the patient sat on a stool, leaning over a basin, while stringy mucus and saliva in great quantities poured from the mouth. After its withdrawal she experienced great relief and shortly afterward was able to swallow some beef tea with more ease. This gradual process of dilatation was continued daily, and on the fourteenth day I was able to pass a No. 12 catheter through the stricture. Two days later I passed Otis' dilating urethrotome, without the blade, and dilated the stricture to the full size of the open instrument. Immediately after its withdrawal I introduced an ordinary œsophageal bougie (about three-eighths of an inch in diameter). This was retained for several hours. From this date, November 2, dilatation was continued by means of Mr. Tufnell's conical rectal bougie, and seven days later, November 9, I was able to get in the full sized bougie, the part which was held in the stricture measuring five-sixths of an inch in diameter.

This large bougie was passed daily till December 22, and retained each time for periods varying from one to four and a half hours. She was then discharged, and went to a situation in the country.

I have frequently heard of her since, but last year I had an opportunity of examining her, as she came up to Dublin because she thought the stricture was again contracting. I was then very gratified to find that though there was some contraction it was very slight; it was, however, sufficient to make the passage of the full-sized rectal bougie a matter of great difficulty. I then determined to try the effects of electrolysis, and after two or three séances, I found that this electrode measuring two-thirds of an inch in diameter passed with the greatest ease. The rectal bougie could also be introduced with ease, so I sent her back to the country.

I think we may look upon this case, though not absolutely, yet to all intents and purposes, as cured; since recontraction was so very slight after the lapse of eight years.

The second case was that of a lady, æt. 30 years, the daughter of a doctor in the North of Ireland, whom I first saw on December 8, 1883, in consultation with the late Dr. Robert McDonnell, at whose request I undertook the treatment. The history of her case was as follows. She stated that in the spring of 1870, nearly fourteen years previously, she had an attack of acute tonsillitis. The tonsils were cauterized with nitrate of silver, and a gargle was ordered for her, of the strength of

which she complained very much. Shortly afterward she experienced symptoms of œsophageal obstruction, for which her father consulted a doctor in a northern town. Both the patient and her father declared that he passed a bougie very roughly, and hurt her very much, and that she was unable to swallow solid foods for days afterwards. Subsequently to this she experienced recurring attacks of dysphagia, lasting for three or four days, with intervals of three weeks or so, during which time she was nearly quite well. Gradually the intervals became shorter and the periods of dysphagia longer. In 1879, being in Manchester, she consulted a doctor there. He, believing the stricture to be spasmodic, galvanized the œsophagus every second day for weeks. He also tried to pass a bougie, but found great difficulty and much pain was caused. She could not swallow anything solid for weeks afterwards, even when minced fine. From that time until I saw her with Dr. McDonnell, no attempt of any kind had been made to remedy her condition, which on December 8, 1883, was as follows: For years she had not been able to swallow anything solid. Her diet consisted of beef tea, thin arrowroot, milk, and sometimes bread soaked in tea. Her breakfast, which consisted of two cups of milk, took her an hour and a half to swallow. Luncheon about an hour, and dinner between one and two hours. The food which was taken in very small quantities at a time did not regurgitate, but when swallowed took a long time to go down. Eructations occasionally came on, causing great pain referred to the sternum and between the shoulders. She was given a little water to swallow and a stethoscope placed at the back on a level with the third dorsal vertebra and a little to the left, revealed a peculiar scraping sound, which could even be heard sometimes at a little distance; but the normal glou-glou was quite absent. Dr. McDonnell and I both made several attempts with variously sized bougies to pass the stricture, but every attempt failed. We were both quite satisfied that the stricture was organic and cicatricial, and situated in the upper part of the œsophagus, about an inch below the cricoid cartilage.

On December 13 she came to my own house, and then after many attempts, I at last succeeded in introducing a No. 1 urethral bougie, which was firmly gripped. I left it in situ for a few minutes, when an attack of laryngeal spasm came on which obliged me to withdraw the bougie, and which was quickly relieved by nitrate of amyl. Two days later, No. 1 was again passed and retained ten minutes, no laryngeal spasm resulting. On December 17, two days later, a fine bulbous pointed bougie No. 3 was got in and retained 16 minutes. On the 19th, the same size was retained 75 minutes. The same bougie was

passed every second day until the 24th. My note on that day was: "She does not think she can swallow more quickly, but she can do so with less pain and spasm, and has no choking fits now which she used to have frequently." On that day Mr. J. K. Barton saw her with me. He entirely concurred in the diagnosis, and we then discussed the advisability of nicking the stricture with Maisonneuue's urethrotome, but this was never done, as the gradual dilatation seemed to be progressing satisfactorily. I will not weary you with a daily record of the progress made. I will only call attention to the chief incidents as they occurred in their order, merely saying that by slow degrees the size of the bougies was increased. On December 31, 1883, No. 5 was got in. On January 2, 1884, I find this note: "It is a remarkable thing that when a tight fitting bougie is first attempted, it always brings on retching, often violent, but a bougie which is only moderately tight or is loose in the stricture, never does." By January 30, I had attained to No. 14 urethral bougie, English gauge. On February 13 I began the use of Tuffnell's rectal bougies, and passed No. 3. On May 5, 1884 I passed Tuffnell's full size rectal bougie, and continued its use with occasional intermissions until July 4, when she went home.

During this period, extending over nearly seven months, the bougies were passed almost without intermission every second day; the urethral bougies were retained for periods varying from 10 minutes to 3 hours at a time, during which time large quantities of stringy mucus poured from the mouth. The rectal bougies on account of their size could not be retained so long, but they were kept in for periods varying from 12 to 45 minutes.

The symptoms, as we might expect, improved *pari passu* with the enlargement of the stricture. Thus on January 13, when the stricture accommodated a No. 9 bougie, her husband estimated that an hour and a half had been saved at her meals per day. On February 25, she wrote to me to say that her dinner had consisted of roast duck, cut fine, and mashed potatoes; this was the first solid food she had eaten for years. When she left Dublin on July 4, she could eat whatever she liked. She has visited me frequently since, and about twice a year I pass a bougie for her, but there is apparently no recontraction of the stricture; this is probably due to the fact that she is herself alive to the danger of recontraction and accordingly comes at intervals to get the bougie passed.

The next case is that of a lady, æt. 45 years, who consulted me for the first time on June 18, 1886, for difficulty in swallowing; and it is especially interesting as it was the first case of œsophageal stricture in

which I tried electrolytic treatment. She had suffered from gradually increasing dysphagia for 15 years, for which she could assign no cause, when I saw her she was extremely emaciated, markedly exsanguine, and of highly nervous temperament. This, I presume, was the reason that her dysphagia had always been looked upon as spasmodic and had been treated invariably by tonics. She could swallow fluids with comparative ease, but any attempt at solids brought on attacks of choking which generally lasted an hour. Bread she found the easiest solid to manage, and meat was always the worst. The first day I saw her, I tried to pass an œsophageal bougie but failed, and then I tried a No. 12 urethral bougie, but that was also unsuccessful, as I could not get it past a smooth, tough obstruction which was localized at a spot one inch below the level of the cricoid cartilage. The result of my efforts was severe pain in the back of the shoulders and in the chest. She was, however, quite well until the next morning when a small piece of bread brought on an attack of choking, which was followed by violent spasms and retching which lasted the whole day. I made no further attempt for 4 days, and then on June 22, I succeeded in getting an olivary pointed gum-elastic bougie (No. 10) though the stricture. I then found that the stricture was apparently due to a ring of smooth, tough, fibrous tissue. The next day the same bougie was passed and retained 10 minutes. On the following day, June 24, I passed an electrode down to the stricture, and connecting it with the negative pole of the battery, passed a weak current, 9 Leclanche's cells, for 10 minutes, after which a No. 16 electrode passed easily. The electrolysis caused very little distress. On the 25th the same electrode was used for about 10 minutes, and again for 8 minutes on the 26th. On the 28th I passed No. 20 electrode down to the stricture, but could not get it through. I then turned on the current, 4 times of 2 minutes each. At the third the electrode passed through the stricture with ease. On the 29th and 30th the same electrode was used. The treatment was now suspended until July 5, on account of the supervention of the catamenia which were always abundant and necessitated her keeping to her bed. On that day I found the No. 20 could pass easily, merely hitching at the stricture; but the current was not used. At this time she could swallow, she said, without difficulty, her throat felt so large. She was obliged to return home to the West of Ireland for family reasons, so that I did not again see her untill the 25th of the following October. I then found that there was some recontraction. I could just get an electrode three-eighths of an inch in diameter through the stricture. The following day I electrolysed the stricture for 10 minutes and suc-

ceeded in passing a large sized electrode, five-elevenths of an inch in diameter. On October 30, after electrolysing the stricture with 12 cells for a few minutes, I passed the largest electrode I possessed, measuring two thirds of an inch in diameter. On November 1 and 2, electrolysis was employed for some minutes each day, the largest electrode being used and on November 3, 1886, she returned home.

I have seen her at long intervals since, but I have been unable to detect any sign of recontraction. I saw her last year and was surprised to see how fat she had grown, and how improved she was in her general health. She never experiences now the slightest difficulty in swallowing her food. It is worth while observing that from the day I first saw her on June 18, until she returned home on November 3, she visited me 16 times, and electrolysis was employed on 11 occasions. This forms a striking contrast with the time required for gradual dilatation by bougies alone.

The fourth and last case I have to record is that of a man, æt. 68 years, by occupation a railway guard, who has recently been under my care. Gradually increasing dysphagia had been coming on for 7 or 8 years. At the beginning there were intervals during which he could swallow quite well. He could assign no cause for the disease and never had had syphilis, or any previous disease or injury to the gullet. Until three years ago he was able to eat his ordinary food, but then he had to begin to mince his food. In May or June last, he had to give up eating meat or any solid food. His food lately has consisted of the soft part of bread broken into cocoa, soup, or chicken broth with bread soaked in it and for supper Benger's food. This he could swallow well, but nevertheless he had been emaciating rapidly. When he came to me on December 17, 1889, I found I could pass a fairly large sized olivary pointed bougie (somewhat less than $\frac{1}{2}$ inch in diameter) through an apparently fibrous stricture situated, as nearly as I could measure it, about 4 centimetres from the orifice of the œsophagus. On passing a bougie downwards, a second stricture was discovered close to the cardiac orifice of the stomach. A series of measurements were taken which showed that there was a distance of $15\frac{1}{2}$ centimetres between the two strictures; and therefore the lower stricture was situated about 4 or 5 centimetres above the cardiac orifice. At this time I could not estimates its size as I could not succeed in passing any bougie through it. I therefore devoted my attention during the next few days to dilating the upper stricture. On December 21, his weight in his clothes was 10 st. $5\frac{1}{2}$ lbs. On December 24, I passed an œsophageal dilator, made by Matthieu, through the upper stricture and having dilated it to its

full size (about one inch in its broadest diameter) I withdrew it slowly. The subsequent pain was very slight, and he told me he thought he could get down his food more easily.

Up to December 30, I had not been able to pass even a small bougie through the cardiac stricture, and I discussed both with the patient and with Dr. Ford of Waterford, who sent up the patient to me, the propriety of dilating this lower stricture with the finger through an opening made in the stomach, as recommended and successfully performed by Loreta of Bologna; but on this day I succeeded in passing this œsophageal bougie. I then determined if possible to forcibly dilate the stricture and accordingly, having succeeded in passing the same œsophageal dilator as before, I opened it, until it measured about $\frac{3}{4}$ of an inch in diameter, and withdrew it. The stricture was found to be extremely firm and resisting and the dilating process caused some pain, which continued during the night and was referred to a spot between the shoulders. The following day deglutition seemed to him to be easier, and I then succeeded in passing a No. 20, and on January 1, a No. 28, into the stomach. This No. 28 measures $1\frac{1}{2}$ inches in circumference. His weight was again taken, when it was found that he had gained 1 lb. 3 oz. since December 21. The bougie was kept in for 15 minutes.

On January 3, I began electrolysis and repeated it every day until the 9th, and again on the 13th and 16th, that is, in all, 9 times. Both strictures were electrolysed for about 15 minutes each time. On January 10, I was able for the first time to pass a full sized œsophageal bougie through both strictures into the stomach. It was passed daily till the 17th when I saw him for the last time; on each occasion it was kept in from 15 minutes to half an hour. On January 4, he was able to take meat for the first time and continued it daily afterwards. His weight on January 17 was 10 st. 11 lbs., that is, he had gained since December 21 $5\frac{1}{2}$ lbs. in weight. He returned home on January 18. He has gained also considerably in strength, and the day before he left me, told me with pride that he had walked the whole way from Phibsboro road to my house.

Dr. Ford, of Waterford, who has been attending him since his return home, and who has passed the bougie successfully every second day, wrote to me on February 13, saying: "Ned could not be better. He saw you on December 17, and since then he has gained 18 lbs. in weight. His appetite, whetted by 2 or 3 trips to Tramore every day, is excellent, and he has no difficulty in deglutition. * * * This morning I noticed his uniform coat fitting him as it should. There was a time when it hung loosely on him."

I heard from the patient himself on March 13. He tells me there is no difficulty in passing the bougie down into the stomach. This is done every second day and left in for 15 minutes each time. He says he gained 28 lbs. between January 21, and March 13.

These four cases of fibrous stricture of the œsophagus are instructive in many ways. The last one, of course, is open to the objection that the treatment has been too recent to speak with any confidence as to the ultimate result, and I also confess that, for a time, I was impressed by the doubt as to whether some malignant disease were not at the root of it, having regard to the age of the patient, viz., 68. But, on the other hand, a history of gradually increasing dysphagia extending over a period of eight years, and the improvement which followed the process of dilatation, are in favor of the strictures being of a cicatricial nature. Added to these the sense of touch which gave the impression of a dense band or thickening instead of the nodulated tumefaction of a malignant growth, I think I am justified in looking upon the case as one of a benign character, although the possibility of a malignant neoplastic growth cannot be entirely dismissed from view.

In the first place these cases show that forcible dilatation or rupture, when followed by systematic treatment, may be useful in some of these cases. Its advantages are that it hastens the process of dilatation, especially in cases where it is desirable to open up the passage with as little delay as possible; and secondly it is a much safer proceeding than dividing the stricture with a sharp instrument. There can be little doubt that division of a stricture, where we can regulate the amount, position and direction of the incision, is ideally the best, but unfortunately in the œsophagus this is not exempt from danger. In Mackenzie's book on the Throat and Nose, he gives statistics of eleven cases of cicatricial stricture, in which internal œsophagotomy was performed with three deaths, all due to the operation. This gives a percentage of 27.28%. Rapid dilatation, on the other hand, is comparatively a safe procedure, and has proved beneficial in the limited experience I have had of it. Electrolysis, I believe, will prove of great service

in these cases, which are acknowledged to be difficult and often intractable to treat. Our experience of its use in œsophageal strictures is, of course, very scanty, but in similar affections of the urethra it has found many warm supporters. Many will remember the interesting paper on this subject read before this Academy by Mr. Patrick Hayes. It was mainly owing to that paper that the idea occurred to me to try it in œsophageal strictures of a cicatricial nature. Case III seems to show that by electrolysis we can obtain a more rapid dilatation than by the simple passage of bougies, and in her case, certainly, the improvement appears to be permanent, as there was no recontraction three years afterwards. In the last case I also think it was of use, and I think the enlargement of the cardiac stricture especially was hastened by the use of the electric current.

There are other points of interest which time will not allow me to refer to now—but I trust that other surgeons will be induced to try electrolytic treatment of these strictures and to publish the results, so that by accumulated knowledge we may be able to arrive at a just estimate regarding its utility.

"Organic stricture, of whatever kind, is incurable. *Dilatation*, by means of bougies increasing in size, may afford partial and temporary relief. * * * The principal use of a bougie is to determine the existence of a stricture, its situation and nature, and thus to complete the diagnosis of this affection—due caution being observed in passing the instrument."—*Gant's Student's Surgery*, 1890, p. 536.